



## **The R.V. Pelagia pre-drilling site survey at the Rockall and Porcupine cold water coral mounds provinces, European Atlantic margin. The CARBONATE project, ESF EuroMARC program.**

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From 30 September to 22 October 2007 a cruise with the Royal NIOZ research vessel Pelagia was carried out within the framework of the ESF (EuroMARC) project CARBONATE. The goal of this cruise was to complete the existing data set of carbonate mounds present at the European Atlantic margin in order to be able to choose suitable coring sites to drill complete top to base sections through the carbonate mounds with the MeBo drilling device. This is a remotely operated drill that is placed at the sea floor and capable of drilling sediment cores with a maximum length of 85 metres. The drilling cruise, with the Irish research vessel Celtic Explorer, is planned to take place in the summer of 2008.

During the Pelagia cruise 5 carbonate mound provinces were visited. The mounds were selected based on two main criteria:

- the mound provinces should represent different stages in mound development
- it must be possible to penetrate the mounds from top to base with the MeBo (expected maximum sequence thickness in the order of 75 m)

The first area that was visited is located at the SE Rockall Bank margin. These mounds are characterised by abundant living cold water corals at their top. The second mound province that was visited is located at the SW Rockall Bank. Initially a large mound cluster known as Franken Mound was chosen for detailed studies. This mound, as well as smaller mounds in the vicinity, is dominated by dead corals and it is considered to be in what is often called the retirement stage. At the W and N margin of the Porcupine Bank two areas were visited. Most of the mounds occur as isolated structures. Only limited amounts of living cold water corals are present. The mounds in the last area that was visited are also referred to as the Magellan Mounds. This is a group of small (<100 m) mounds located in the Porcupine Seabight. These mounds are mostly fully buried and thus represent the final stage of mound development.

At all sites a multibeam bathymetric survey was carried out. Subsequently a benthic lander was deployed which was equipped for a period of 2 to 4 days to measure near bed hydrography and sediment transport. This was followed by seismic and video surveys.

The initial results of the cruise indicate that at all proposed drilling sites carbonate mounds with a total thickness that can be penetrated by the MeBo are present. The video observations did not reveal the presence of any rough terrain that may hamper the positioning of the MeBo at the seabed.